

**Optima Diode - Low forward voltage drop, Fast Recovery Diode**

|                           |              |                            |              |
|---------------------------|--------------|----------------------------|--------------|
| <b>V<sub>RRM</sub></b>    | <b>600 V</b> | <b>I<sub>F</sub></b>       | <b>8 A</b>   |
| <b>V<sub>F(TYP)</sub></b> | <b>1.3 V</b> | <b>T<sub>RR(TYP)</sub></b> | <b>60 ns</b> |

**Features**

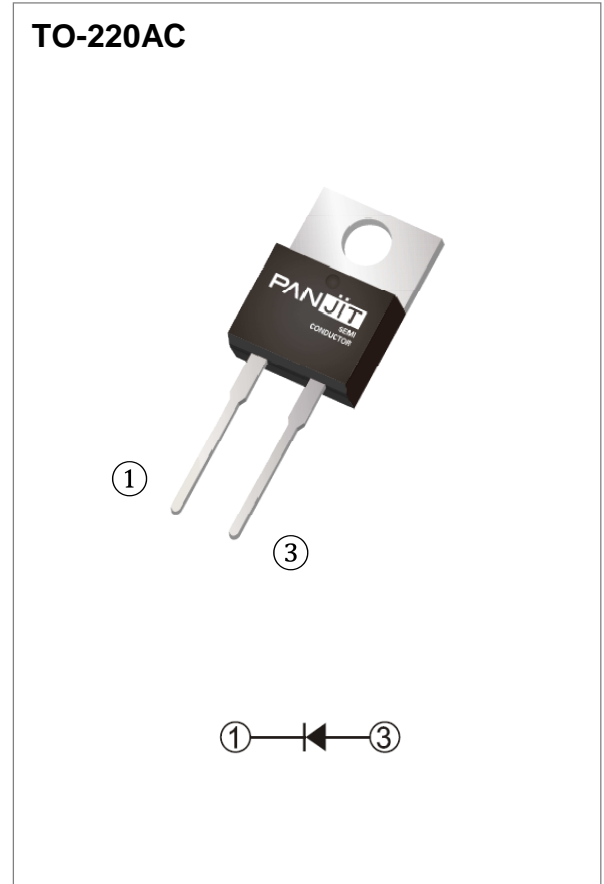
- Fast recovery
- Low forward voltage
- Optimized trade-off performance between V<sub>F</sub> & T<sub>RR</sub>
- Soft recovery characteristic for better EMI
- High junction temperature 150 °C
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

**Mechanical Data**

- Case: TO-220AC molded plastic
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.067 ounces, 1.89 grams

**Application**

- PFC, UPS, PV Inverter, EV Charging Station, Welder



**Maximum Ratings and Thermal Characteristics** (T<sub>C</sub> = 25 °C unless otherwise specified)

| PARAMETER  | SYMBOL             | LIMIT   | UNITS |
|--|--------------------|---------|-------|
| Repetitive Peak Reverse Voltage  | V <sub>RRM</sub>   | 600     | V     |
| DC Blocking Voltage  | V <sub>DC</sub>    | 600     | V     |
| Diode Forward Current @ T <sub>C</sub> =133°C                                      | I <sub>F(AV)</sub> | 8       | A     |
| Repetitive Peak Surge Current<br><i>t<sub>p</sub> = 8.3 ms, sine-wave, D=0.5</i>   | I <sub>FRM</sub>   | 16      | A     |
| Peak Forward Surge Current<br><i>t<sub>p</sub> = 8.3 ms, single half sine-wave</i> | I <sub>FSM</sub>   | 95      | A     |
| Maximum Power Dissipation  | P <sub>total</sub> | 69      | W     |
| Operating Junction Temperature Range   | T <sub>J</sub>     | -55~150 | °C    |
| Storage Temperature Range  | T <sub>STG</sub>   | -55~150 | °C    |

**Electrical Characteristics** ( $T_C = 25\text{ }^\circ\text{C}$  unless otherwise specified)

| PARAMETER                     | SYMBOL          | TEST CONDITION  | MIN. | TYP. | MAX. | UNITS                     |
|-------------------------------|-----------------|---|------|------|------|---------------------------|
| Forward voltage drop          | $V_F$           | $I_F = 8\text{ A}, T_J = 25\text{ }^\circ\text{C}$  | -    | 1.3  | 1.8  | V                         |
|                               |                 | $I_F = 8\text{ A}, T_J = 125\text{ }^\circ\text{C}$   | -    | 1.2  | -    |                           |
| Reverse leakage current       | $I_R$           | $V_R = 600\text{ V}, T_J = 25\text{ }^\circ\text{C}$  | -    | -    | 100  | $\mu\text{A}$             |
|                               |                 | $V_R = 600\text{ V}, T_J = 125\text{ }^\circ\text{C}$   | -    | -    | 500  | $\mu\text{A}$             |
| Reverse recovery time         | $T_{RR}$        | $I_F = 0.5\text{ A}, I_R = 1\text{ A},$<br>$I_{RR} = 0.25\text{ A}$<br>$T_J = 25\text{ }^\circ\text{C}$             | -    | -    | 40   | ns                        |
|                               |                 | $I_F = 1\text{ A}, V_R = 30\text{ V},$<br>$di/dt = 300\text{ A}/\mu\text{s},$<br>$T_J = 25\text{ }^\circ\text{C}$   | -    | -    | 35   | ns                        |
| Reverse recovery time         | $T_{RR}$        | $I_F = 8\text{ A}, V_R = 400\text{ V},$<br>$di/dt = 300\text{ A}/\mu\text{s},$<br>$T_J = 25\text{ }^\circ\text{C}$  | -    | 60   | 90   | ns                        |
| Peak recovery current         | $I_{RRM}$       |   | -    | 4.5  | -    | A                         |
| Reverse recovery charge       | $Q_{RR}$        |   | -    | 160  | -    | nC                        |
| Softness factor = $t_b / t_a$ | S               |   | -    | 1.7  | -    |                           |
| Reverse recovery time         | $T_{RR}$        | $I_F = 8\text{ A}, V_R = 400\text{ V},$<br>$di/dt = 300\text{ A}/\mu\text{s},$<br>$T_J = 125\text{ }^\circ\text{C}$ | -    | 85   | -    | ns                        |
| Peak recovery current         | $I_{RRM}$       |   | -    | 8    | -    | A                         |
| Reverse recovery charge       | $Q_{RR}$        |   | -    | 440  | -    | nC                        |
| Softness factor = $t_b / t_a$ | S               |   | -    | 1.05 | -    |                           |
| Thermal Resistance            | $R_{\theta JC}$ |   | -    | -    | 1.8  | $^\circ\text{C}/\text{W}$ |

TYPICAL CHARACTERISTIC CURVES

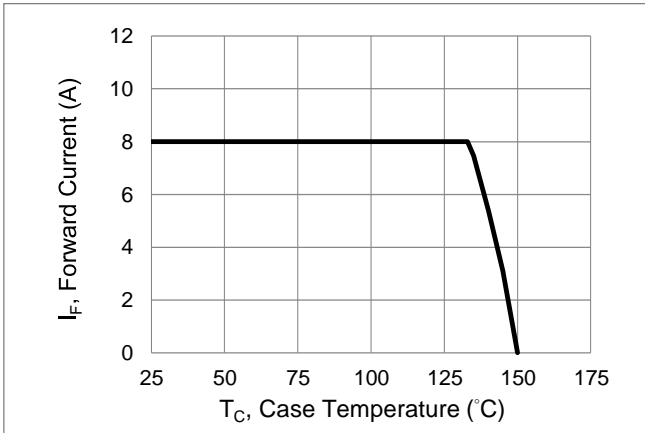


Fig.1 Forward Current Derating Curve

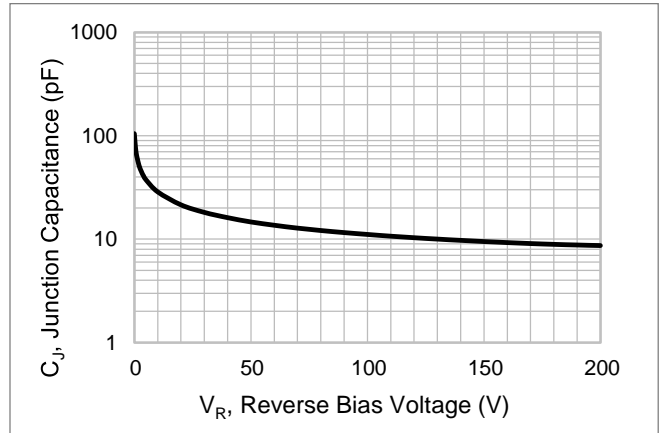


Fig.2 Typical Junction Capacitance

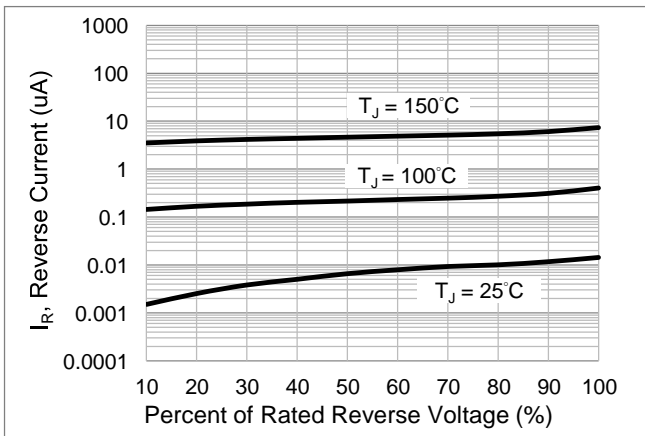


Fig.3 Typical Reverse Characteristics

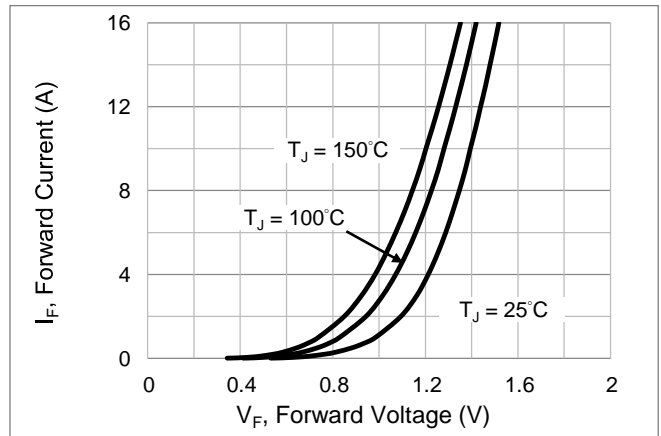


Fig.4 Typical Forward Characteristics

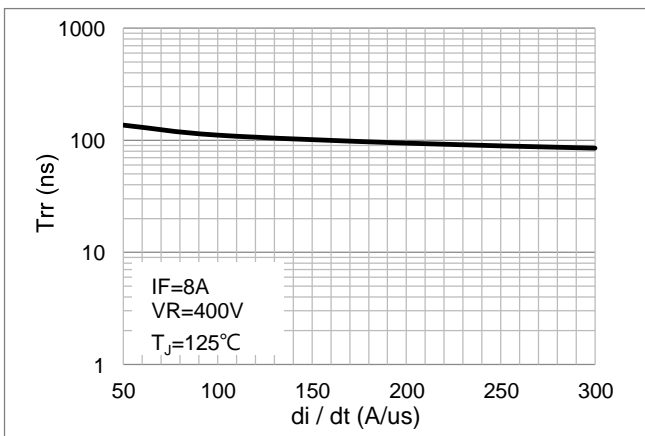


Fig.5 Typical Reverse Recovery Time Versus di/dt

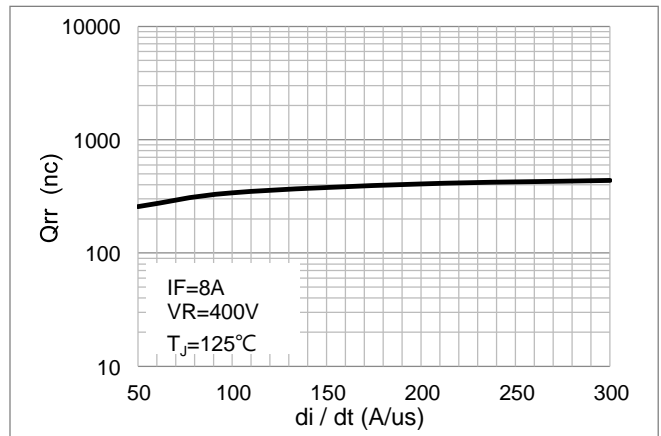
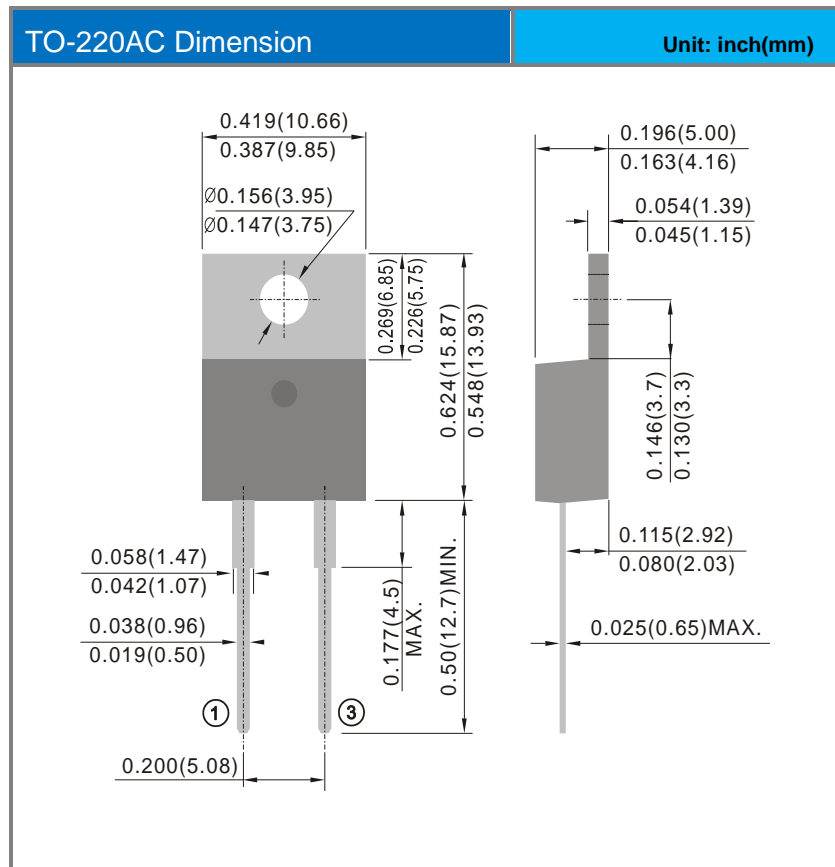


Fig.6 Typical Reverse Recovery Charges Versus di/dt

**Product and Packing Information**

| Part No.   | Package Type | Packing Type | Marking   |
|------------|--------------|--------------|-----------|
| PSDP0860L1 | TO-220AC     | 50pcs / Tube | SDP0860L1 |

**Packaging Information**



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